

**PHASE III REMEDIAL ACTION PLAN  
FORMER P.R. MALLORY PLANT SITE  
CRAWFORDSVILLE, INDIANA**

**PRINTED ON**

**AUG 15 1988**

**PHASE III REMEDIAL ACTION PLAN  
FORMER P.R. MALLORY PLANT SITE  
CRAWFORDSVILLE, INDIANA**

August 1988  
Ref. No. 1916

**CONESTOGA-ROVERS & ASSOCIATES**

## TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 SCOPE OF WORK	5
3.0 WASTE MANAGEMENT ALTERNATIVES	7
4.0 PHASE III REMEDIAL ACTIVITIES	10
4.1 GENERAL	10
4.2 PRE-CONSTRUCTION ACTIVITIES	11
4.3 MOBILIZATION AND SITE PREPARATION	12
4.4 EXCAVATION/REMOVAL ACTIVITIES	13
4.4.1 General	13
4.4.2 Clearing and Site Preparation	15
4.4.3 Excavation of Soil and Sediment	16
4.4.4 Miscellaneous Structures	19
4.5 WASTEWATER TREATMENT	20
4.6 TRANSPORTATION AND DISPOSAL	21
4.7 SITE RESTORATION	22
4.8 PROJECT CLOSEOUT	23
5.0 PROJECT SCHEDULE	25
6.0 PHASE III FINAL REPORT	26
7.0 REFERENCES	27

LIST OF FIGURES

Following  
Page

FIGURE 1.1	SITE LOCATION	1
FIGURE 5.1	PROPOSED PROJECT SCHEDULE	25

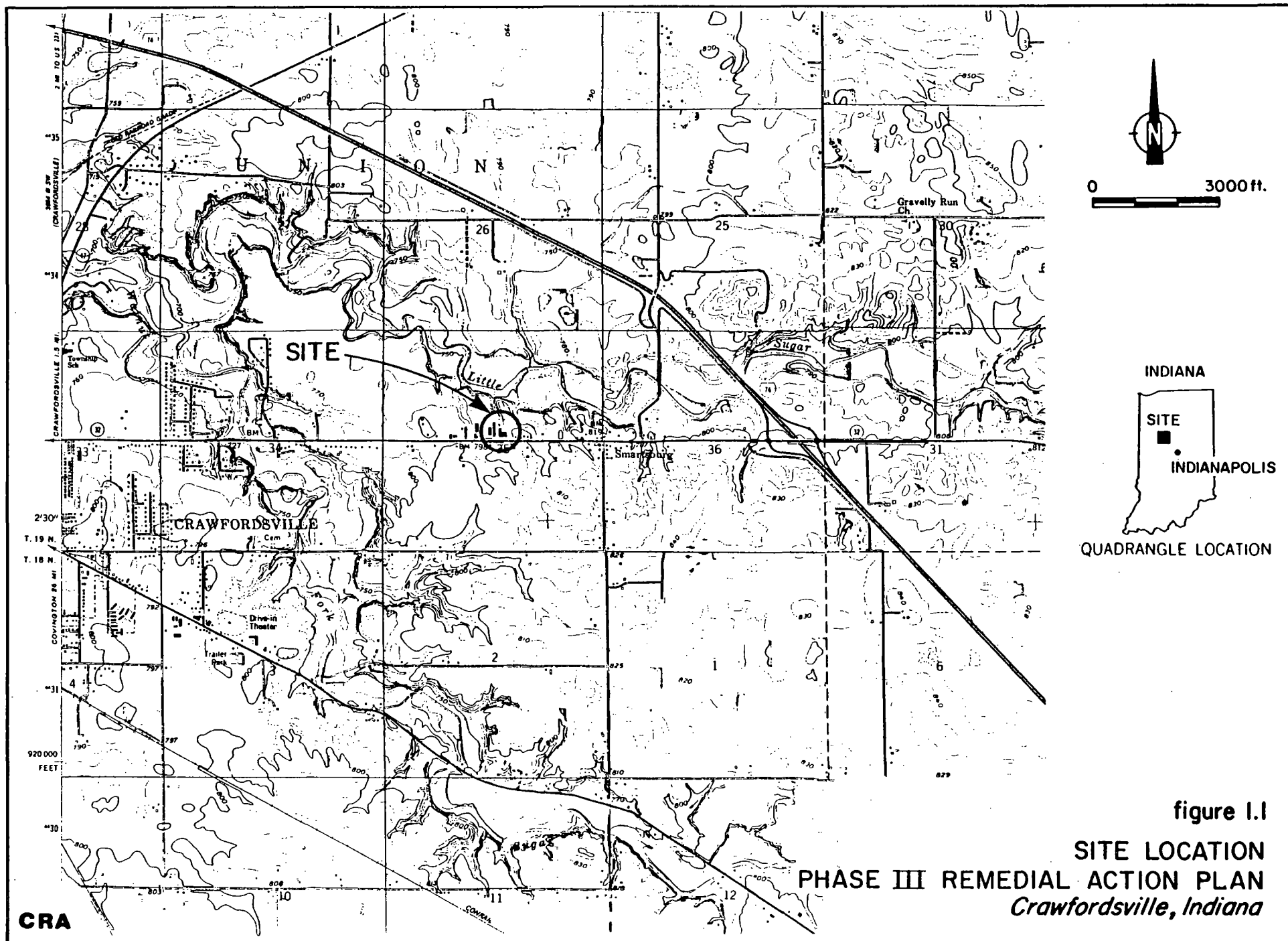
## 1.0 INTRODUCTION

The former P.R. Mallory plant site (Site) is located approximately three miles east of Crawfordsville, Indiana in Montgomery County as shown on Figure 1.1. Situated on lands currently owned by Terra Products Inc., the Site is bordered by State Road No. 32 to the south and Little Sugar Creek to the north.

P.R. Mallory manufactured dielectric capacitors at the Site from 1957 to 1969. During this period, a variety of dielectric fluids including oils containing polychlorinated biphenyls (PCBs) were used in the manufacturing process. Operations were temporarily suspended in 1968 after a fire destroyed the impregnation room in the northeast section of the plant. Operations were resumed until 1969 when a second fire destroyed the entire plant.

Duracell has consulted with the United States Environmental Protection Agency (EPA) and the Indiana Department of Environmental Management (IDEM) and has undertaken the following work at the Site:

- i) Initial Site Screening Sampling Program (August to September 1986);



- ii) Phase I Remedial Construction (December 1986 to January 1987);
- iii) Phase I Sampling and Analysis Program (December 1986 to January 1987);
- iv) Phase I Supplemental Sampling and Analysis Program (May to July 1987);
- v) Phase II Remedial Construction (February to March 1988); and
- vi) Phase II Investigative Program (February to May 1988).

The programs implemented to date at the Site are described in detail under separate cover (refer to Section 7.0 References). Implementation of these programs achieved the following objectives:

- i) securement of the Site to prevent public access;
- ii) on-Site securement of debris, capacitors and contaminated soils which potentially represented an imminent hazard to the environment;
- iii) on-Site securement of materials from outside the Site fence containing elevated concentrations of PCB; and

- iv) delineation of the vertical and areal limits of residual contamination.

Based on an evaluation of the data collected to date, sufficient physical and chemical information are available to proceed with the final cleanup of the Site.

Implementation of a final program for management of PCB contaminated soil, sediment and debris is proposed to proceed at the Site beginning in September 1988.

This report describes the remedial action proposed for implementation at the Site and includes:

- i) a summary of the work program proposed at the Site;
- ii) a brief review of remedial alternatives considered relative to the Site;
- iii) a description of proposed on-Site remedial activities including Site preparation; excavation/removal activities; and Site restoration;
- iv) criteria for disposal of various waste materials generated at the Site; and



- v) a proposed schedule for implementation of these activities.

All activities at the Site are proposed to be conducted in accordance with protocols previously approved by the IDEM and USEPA and subsequent amendments/modifications to these protocols including: health and safety protocols for all on-Site activities and sampling and analytical protocols for confirmatory samples.

The responsibilities for the Site which had previously been assumed by Duracell have been assumed by Battery Properties Inc. who will assume responsibility for all current and future work at the Site.

## 2.0 SCOPE OF WORK

The scope of work proposed for Phase III includes those measures required to eliminate the damages caused by PCB-contaminated soil, sediment and debris at the Site and restore the affected areas. The proposed plan of action is consistent with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) 42 U.S.C. 9601 et. seq. as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR Part 300, and existing USEPA policy.

The proposed Phase III remediation program has been developed to meet several objectives, including:

- i) compliance with applicable regulatory requirements and policies regarding the implementation of PCB Site cleanups;
- ii) ensure the safety and health of the public and on-Site personnel and protection of the environment during and following implementation of the proposed work;
- iii) provide an effective solution to the management of PCB materials at the Site; and

- iv) minimize or eliminate the requirements, if any, for post-cleanup environmental monitoring.

The work activities which will be implemented under Phase III will address the remediation of previously excavated and in situ PCB affected soils, concrete, and other miscellaneous materials currently on Site. Activities associated with the proposed Phase III Remedial Plan include:

- i) Excavation of in situ PCB-contaminated soil, sediment and debris;
- ii) Disposal of all waste material generated at the Site; and
- iii) Restoration of the Site to pre-remediation conditions.

### 3.0 WASTE MANAGEMENT ALTERNATIVES

The management of PCB-contaminated soil, sediment and debris is the primary component of the Phase III remediation program to be implemented at the Site. Duracell completed an evaluation of remedial alternatives available and applicable to current Site conditions including off-Site disposal, off-Site incineration, on-Site incineration and on-Site containment. Based on this review, Duracell selected off-Site disposal as the preferred remedial alternative for management of PCB-contaminated soil, sediment and debris from the Site, on the basis of:

- i) proven technology;
- ii) protectiveness of human health and the environment;
- iii) regulatory compliance;
- iv) constructability;
- v) immediate availability for implementation; and
- vi) cost effectiveness.

Duracell proposes to dispose of PCB-contaminated soil and sediment, and debris which is suitable for landfilling, in a Toxic Substances Control Act (TSCA) regulated cell at a treatment/storage/disposal (TSD) facility currently in compliance with applicable local, State and Federal regulations.

Duracell has selected the following TSD facilities as the preferred disposal sites for PCB-contaminated soil, sediment and debris:

1. Chemical Waste Management, Inc., Emelle, Alabama.
2. U.S. Pollution Control, Inc., Grayback Mountain Facility, Utah.

Duracell may propose alternate facilities for disposal in the event either of the above-noted facilities falls out of compliance with applicable regulations or fails to maintain operational standards and/or cost criteria acceptable to Duracell.

Hazardous and non-hazardous waste material, other than the material addressed above, which has been or will be generated at the Site, will be managed in accordance with the following criteria:

- i) PCB capacitors will be disposed of at a TSCA approved off-Site incinerator;
- ii) non-hazardous waste including above-grade vegetation, decontaminated synthetic liners, and decontaminated/uncontaminated debris will be disposed of in a sanitary landfill;

- iii) hazardous liquids will be incinerated and/or treated and discharged in accordance with applicable regulations; and
- iv) non-hazardous liquids may be used for dust control and/or discharged downgradient of the Site.

#### 4.0 PHASE III REMEDIAL ACTIVITIES

##### 4.1 GENERAL

The major activities associated with the Phase III remedial program include:

- i) various pre-construction activities;
- ii) mobilization and Site preparation;
- iii) excavation/removal of residually contaminated soil, sediment and debris;
- iv) disposal of all generated waste materials; and
- v) restoration of the Site.

Duracell will retain the services of a qualified remedial contractor to implement specific waste removal, disposal and restoration activities.

All Phase III remedial activities performed at the Site shall conform to the protocols and procedures developed and implemented during the Phase I and Phase II work programs. Specific protocols and procedures to be implemented include:

- i) Health and safety protocols - in accordance with:  
Appendix A, "Response Action Work Plan", dated  
October 30, 1986; Appendix A, "Phase II Response Action  
Work Plan", dated November 1987; and subsequent  
revisions.
- ii) Sampling and analysis protocols - in accordance with:  
Appendix B, "Response Action Work Plan", dated  
October 30, 1986; Appendix B, "Phase II Response Action  
Work Plan", dated November 1987; and subsequent  
revisions.
- iii) Quality assurance and quality control protocols - in  
accordance with "Quality Assurance Project Plan", dated  
November 1986 and subsequent revisions.

Specific tasks associated with each of the  
major activities previously identified are outlined in the  
sections which follows.

#### 4.2 PRE-CONSTRUCTION ACTIVITIES

Prior to initiation of on-Site construction  
activities, Duracell will conduct an off-Site contingency  
planning meeting with appropriate local, State and Federal  
officials, in accordance with the health and safety protocols



approved for the Site. The meeting is intended to advise the officials of the nature of the work to be performed and confirm procedures for local emergency personnel who may have to respond to an incident at the Site.

In addition, Duracell shall develop the following operations plans, in conjunction with the selected remedial contractor, prior to initiation of on-Site activities:

- i) Site Layout Plan to identify locations of various Site facilities, staging areas and work zones.
- ii) Detailed Excavation Plan to identify methods and procedures for excavation in specific areas of the Site and sequencing and scheduling of excavation activities.
- iii) Transportation Plan to identify proposed and alternate routes to disposal facilities and contingency plans for response to an accident.

#### 4.3 MOBILIZATION AND SITE PREPARATION

Mobilization and Site preparation activities include all activities required to acquire, develop and

transport plant, equipment, personnel and supplies to the Site and prepare the Site for the commencement of removal operations. Specific tasks will include, but not necessarily be limited to, the following:

- i) preparation of access roads, support areas and truck staging areas;
- ii) mobilization and set-up of office trailers, personnel hygiene and health and safety trailers, and storage units;
- iii) provision of an on-Site weigh scale;
- iv) provision of required Site services; and
- v) provision of an on-Site waste water treatment system.

#### 4.4 EXCAVATION/REMOVAL ACTIVITIES

##### 4.4.1 General

The major component of the Phase III remedial program is the excavation/removal and disposal of residually contaminated soil, sediment and debris from the Site. Specific activities to be undertaken include:

- i) disposal of soil, sediment, capacitors, debris and discarded personnel protective equipment currently staged on Site;
- ii) demolition, removal and disposal of miscellaneous structures including the existing pumphouse, incinerator and all or portions of the existing plant slab; and
- iii) excavation of residually contaminated soil and sediment and sampling to confirm performance standards have been achieved.

Duracell completed a review of current USEPA policies and cleanup criteria which have been applied to other sites. Based on this review, the following tiered clean-up criteria are deemed appropriate for this Site:

- i) 10 mg/kg of total PCBs for all affected soils to a depth of 3.5 feet below the final restored grade;
- ii) 25 mg/kg of total PCBs for all affected soils in excess of 3.5 feet below the final restored grade; and
- iii) 10 mg/kg of total PCBs for concrete structures.

The above criteria recognizes the intent of the PCBs Spill Cleanup Policy and its practical application to the Site-specific conditions. Based on the anticipated excavation depths to meet this criteria and the residual levels of PCBs following cleanup, the tiered criteria will provide a level of protection to the public equivalent to that provided by the Spill Cleanup Policy. The criteria transition depth of 3.5 feet represents the regional frost penetration depth which would be the maximum anticipated depth for foundations and services and therefore maximum depth of disturbance for any anticipated future construction activities at the Site.

#### 4.4.2 Clearing and Site Preparation

Vegetation including trees and brush shall be removed from all active work areas and excavation areas prior to commencement of excavation. Trees and brush in excavation areas shall be cut off 18 inches above grade. Vegetation cut from above the 18-inch mark shall be disposed of in a sanitary landfill; vegetation below the 18-inch mark shall be considered contaminated and shall be disposed of with the excavated soil.

Vegetation removed from clean areas of the Site to provide access or clear work areas will be cut at

grade and may be disposed of off Site or stockpiled in a clean area of the Site for use by the property owner.

Existing liners removed to provide access to staged material or areas to be excavated may be decontaminated by a high-pressure water wash and either re-used on Site as a temporary cover, or be disposed of in a sanitary landfill.

#### 4.4.3 Excavation of Soil and Sediment

In situ soil and sediment with residual PCB concentrations in excess of the proposed cleanup criteria shall be excavated and taken to a temporary staging area or loaded directly into haul vehicles for off-Site disposal. Existing yard drain lines and bedding material which is considered contaminated shall also be excavated and prepared for off-Site disposal.

A survey grid shall be established over the Site prior to initiation of excavation activities. Initial excavation depths shall be determined for all sectors of the grid based on existing analytical data and proposed clean-up criteria. The initial excavation depth shall be set a minimum of six inches below the deepest sampling interval where PCB concentrations were detected in excess of the

proposed cleanup standards. Excavation shall be suspended once the initial excavation depth is reached. Samples shall be collected from the excavation surface for PCB analyses.

Samples obtained to confirm clean-up criteria shall be collected in accordance with the following protocols:

- i) excavation areas shall be sub-divided into 50 foot by 50 foot sampling areas;
- ii) each sample area shall be further divided into a minimum of four sub-areas;
- ii) one sample shall be collected from each sub-area and the four sub-area samples shall be composited into one sample for analysis for the sample area;
- iii) sub-area samples shall be collected from the upper six-inch layer of exposed soil.

An initial analysis of the collected samples shall be performed within 48 hours to determine whether cleanup criteria have been achieved. If the sample(s) exceeds the cleanup criteria, an additional six to twelve inches of soil shall be excavated from the sampling area. Additional samples shall then be collected and the PCB

analyses repeated. Additional excavation and sampling shall be performed until sample analyses indicate cleanup criteria have been obtained.

The remainder of the sample, which confirmed cleanup criteria were achieved, will be submitted to a qualified laboratory for subsequent PCB analyses in accordance with USEPA Contract Laboratory Program (CLP) protocols.

Backfilling of the excavation surface may begin once the initial analyses confirm clean-up criteria have been achieved. In the event of a discrepancy between CLP and non-CLP data, the CLP data shall govern. If necessary, previously backfilled surfaces will be re-excavated to permit re-sampling or additional excavation if CLP data conflicts with initial data and indicates an excursion above the cleanup criteria.

Excavation activities shall be sequenced to prevent cross contamination of previously cleaned surfaces/areas and to minimize the extent of excavation surface open at any one time. Excavation areas shall be graded or diked to prevent run-on of surface waters. Any water which collects on potentially contaminated excavation surfaces shall be transferred to the on-Site wastewater storage/treatment system. Waters which collect on clean or

lined surfaces may be discharged to the ground surface in the clean zone.

#### 4.4.4 Miscellaneous Structures

Existing structures to be removed due to residual PCB contamination or to provide access to soil to be excavated include the Site incinerator, pumphouse and all or portions of the existing plant slab.

The incinerator, pumphouse and portions of the slab where PCB concentrations exceed cleanup criteria shall be demolished and the rubble shall be handled in the same manner as the PCB-contaminated soil.

Samples shall be collected from the remaining portions of the slab to identify areas which do not meet cleanup standards and require demolition and disposal.

Concrete core samples shall be collected on a 50 foot by 50 foot grid over the surface of the concrete slab for PCB analysis. The top inch of each core shall be removed and analyzed independent of the remaining core. Additional samples may be collected to define the limits of concrete to be removed. Concrete which does not contain PCBs in levels in excess of cleanup criteria shall be left in place.



Containment facilities constructed during Phase I and II shall be decontaminated and wipe sampled to determine the appropriate disposal method for this material.

#### 4.5 WASTEWATER TREATMENT

Duracell proposes to utilize a wastewater treatment system at the Site for treatment of miscellaneous wastewater. Water to be treated on-Site, prior to disposal, includes ponded water from potentially contaminated excavation surfaces and storage/staging areas and water from the decontamination pad.

The treatment system will consist of a pre-treatment sand or bag filter followed by an activated carbon filter. Wastewater will be stored in a holding tank prior to treatment. Treated waters will be discharged to a separate holding tank. Samples shall be collected from the treated water holding tank for PCB analysis to determine appropriate disposal methods. The treatment system and holding tanks shall be placed in a lined and curbed containment area on the Site.

#### 4.6 TRANSPORTATION AND DISPOSAL

All transportation and disposal activities shall comply with applicable local, State and Federal regulations. Transportation of waste material generated at the Site is considered the maximum risk activity for exposure of waste to the public beyond the limits of the Site. The following measures shall be implemented to minimize, to the greatest extent possible, the potential for public exposure to waste material:

- i) all haulage vehicles shall be EPA and DOT licensed and approved;
- ii) material shall be transported directly to the receiving facility in the container loaded and prepared at the Site; interim handling of the waste material shall not be permitted except in the event of an emergency;
- iii) an approved routing plan shall be developed and strictly adhered to by all vehicles;
- iv) certified weigh scales shall be maintained at the Site or local certified scales utilized to ensure all loads comply with State weight limitations;

- v) all loads shall be manifested out in accordance with TSCA and DOT requirements;
- vi) appropriate State officials for each State where waste will travel will be notified of the increased level of waste transportation activities;
- vii) every load shall be inspected prior to leaving the Site to ensure necessary shipping documents are complete and accurate; linings and tarps are secure; and exterior vehicle decontamination is complete.

Material shall be handled at the receiving TSD facility in accordance with applicable local, State and Federal regulations and in accordance with the facilities standard waste receiving and handling procedures.

#### 4.7 SITE RESTORATION

Site restoration activities will proceed concurrently with excavation/removal activities. Site activities shall be coordinated to allow backfilling of areas where sampling has confirmed clean-up criteria were achieved. Excavated areas shall be backfilled to maintain current Site drainage patterns. All disturbed areas shall be revegetated or resurfaced, as appropriate.

To ensure the success of revegetation efforts, erosion control measures will be implemented where required. Ravine slopes will be protected with a cover of jute netting and the ravine base will be covered with a layer of stones. Additional precautions will include the installation of a series of straw dikes in the ravine bottom.

The existing security fence shall be dismantled, as the work progresses, in areas where it is no longer required to maintain Site security. All remaining portions of the fence shall be removed upon completion of excavation/removal activities. Fence fabric shall be cleaned by high pressure water wash prior to removal from the Site. Fence posts removed from excavation areas shall be disposed of with the excavated soil. Fence posts removed from clean zones shall be removed from the Site.

#### 4.8 PROJECT CLOSEOUT

All equipment involved in the handling of potentially contaminated soil, sediment and debris shall be decontaminated in an on-Site decontamination station prior to removal from the Site. A temporary decontamination station shall be developed prior to removal and disposal of the existing facility.

Decontamination wash water shall be transferred to the on-Site wastewater storage and treatment system or directly into a licensed waste tanker once the wastewater system is dismantled. Wastewater from the treatment system shall be disposed of in an appropriate manner. Spent carbon filters shall be disposed of with the residually contaminated soil.

All project support facilities including office trailers, health and safety trailers, temporary fencing and miscellaneous services shall be disconnected and removed from the Site.

## 5.0 PROJECT SCHEDULE

Duracell has solicited commitments from qualified remedial contractors for implementation of the work program presented herein. In order to ensure the availability of qualified personnel and to complete the work prior to the onset of inclement weather, Duracell proposes to initiate on-Site activities no later than September 15, 1988. It is anticipated that approximately 90 days will be required to complete the program once field activities are initiated.

The proposed project schedule, including anticipated start and completion dates for all major activities, is illustrated on Figure 5.1.

ACTIVITIES	SEPT./88	OCT./88	NOV./88	DEC./88
OFF-SITE CONTINGENCY MEETING . . . . .	*			
MOBILIZATION . . . . .	—			
CLEARING AND SITE PREPARATION . . . . .	—			
EXCAVATION/REMOVAL . . . . .	—	—	—	
TRANSPORTATION/DISPOSAL . . . . .		—	—	
SITE RESTORATION . . . . .		—	—	—
DEMOBILIZATION . . . . .				—

figure 5.1  
 PROPOSED PROJECT SCHEDULE  
 PHASE III REMEDIAL ACTION PLAN  
*Crawfordsville, Indiana*

**CRA**

## 6.0 PHASE III FINAL REPORT

Duracell will prepare and submit a final report to the agencies upon completion of the Phase III program. The report will provide complete documentation of the activities undertaken and will include:

- i) a chronology and description of the remedial construction implemented;
- ii) identification of any variances from the work plan;
- iii) identification of problems encountered and how they were resolved;
- iv) an inventory of quantities and types of material removed/destroyed and their ultimate disposal; and
- v) a compilation of all analytical data collected for the confirmatory sampling program.



## 7.0 REFERENCES

Conestoga-Rovers & Associates. 1986a. Initial Site Screening: Sampling Program, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. September 1986.

Conestoga-Rovers & Associates. 1986b. Response Action Work Plan, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. October 1986.

Conestoga-Rovers & Associates. 1987a. Phase I Remedial Action Report, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. February 1987.

Conestoga-Rovers & Associates. 1987b. Hydrogeologic Investigation Interim Report, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. March 1987.

Conestoga-Rovers & Associates. 1987c. Phase I Sampling and Analysis/Report, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. April 1987.

Conestoga-Rovers & Associates. 1987d. Hydrogeological Investigation Supplemental Data Report, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. July 1987.

Conestoga-Rovers & Associates. 1987e. Phase I Supplemental Sampling and Analysis Report, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. September 1987.

Conestoga-Rovers & Associates. 1988a. Phase II Remedial Action Report, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. August 1988.

Conestoga-Rovers & Associates. 1988b. Phase II Sampling and Analysis Report. Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. August 1988.

Conestoga-Rovers & Associates. 1987f. Phase II Response Action Work Plan, Former P.R. Mallory Plant Site, Crawfordsville, Indiana. Prepared for Duracell International Inc. November, 1987.